

TETAP

I-580 Ramp Metering

“Before” and “After” Evaluation

Final Report

Prepared for:

City of Pleasanton,
City of Livermore,
California Department of Transportation (Caltrans), and
Metropolitan Transportation Commission (MTC)

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The City of Pleasanton in conjunction with the City of Livermore and the California Department of Transportation (Caltrans) received a TETAP grant from the Metropolitan Transportation Commission (MTC) to assist with the “Before” and “After” evaluation of the I-580 Ramp Metering project.

The I-580 Ramp Metering project installed ramp meters on the I-580 Eastbound loop and diagonal on-ramps at Hopyard Road, Hacienda Drive and Santa Rita Road in conjunction with the opening of an eastbound auxiliary lane between Santa Rita Road and El Charro Road. The intent of the metering project was to set restrictive metering rates to discourage cut-through traffic on arterials through the Cities of Dublin, Pleasanton and Livermore while relieving the freeway bottleneck at the Santa Rita Road On-ramp. Intended outcomes of the project were to increase traffic volumes on I-580 Eastbound without increasing travel time by shifting traffic volume away from the metered ramps and arterial cut-through routes to the freeway. It was expected by relieving the freeway bottleneck at Santa Rita Road the extra traffic moving through the project area might increase travel time and congestion downstream at the Altamont Pass bottleneck.

The purpose of the “Before” and “After” studies was to evaluate the effect of the Ramp Metering project on traffic conditions by completing freeway travel time studies on I-580 Eastbound through Pleasanton and Livermore and I-680 Northbound between State Route 84 and I-580, and arterial travel time studies on cut-through routes through the Cities of Pleasanton, Livermore and Dublin. **Figures 1 and 2** illustrate the project area.

Traffic volumes were collected before and after implementation of ramp metering on the freeway, arterials and ramps to identify shifts in travel patterns. The following table summarizes the changes in traffic volumes for the total study period following ramp metering implementation on key locations on I-580 Eastbound, the metered on-ramps and arterial cut-through routes.

“Before” and “After” travel time surveys were completed by KHA and their subconsultant All Traffic Data (ATD), the City of Pleasanton staff, and Caltrans staff. The travel time surveys were conducted along the following corridors and routes:

- § I-580 Eastbound Freeway: From the Eden Canyon Road On-ramp to I-580 Eastbound to the Hopyard Road Diagonal On-ramp to I-580 Eastbound (Completed by Caltrans)
- § I-680 Northbound and I-580 Eastbound Freeway #1: From the State Route 84 On-ramp to I-680 Northbound to the N. Flynn Road Off-ramp from I-580 Eastbound (Completed by Caltrans)

Average Traffic Volume Summary

Location	"Before" Average	"After" Average	% Change
I-580 Eastbound West of Foothill Rd. Off-ramp	30,853	30,849	0.0%
I-580 EB West of Santa Rita Rd. Diagonal On-ramp	31,790	32,550	2.4%
I-580 EB West of El Charro Rd. Off-ramp	37,395	34,431	(-7.9%)
I-580 EB East of Airway Blvd. Off-ramp	33,288	32,766	(-1.6%)
I-580 EB West of N. Flynn Rd. Off-ramp	32,197	32,440	0.8%
Hopyard Rd. Loop On-ramp	1,297	1,822	40.5%
Hopyard Rd. Diagonal On-ramp	1,268	1,624	28.1%
Hacienda Rd. Loop On-ramp	956	1,321	38.2%
Hacienda Rd. Diagonal On-ramp	2,293	2,380	3.8%
Santa Rita Rd. Loop On-ramp	3,283	1,768	(-46.2%)
Santa Rita Rd. Diagonal On-ramp	5,678	2,528	(-55.5%)
SR-84 NB South of Vineyard Ave.	6,266	6,067	(-3.2%)
Stanley Blvd. NB East of Bernal Avenue	8,255	8,092	(-2.0%)

- § State Route 84 Cut-through: From the State Route 84 Off-ramp from I-680 Northbound to the Vasco Road On-ramp to I-580 Eastbound in Livermore via State Route 84, 4th Street, East Avenue and Vasco Road (Completed by KHA/ATD)
- § Sunol-Stanley Cut-through: From the Sunol Boulevard Off-ramp from I-680 Northbound to the First Street On-ramp to I-580 Eastbound via Sunol Boulevard, Stanley Boulevard, Railroad Avenue and First Street (Completed by KHA/ATD)
- § Hopyard Cut-through: From the Hopyard Road Off-ramp from I-580 Eastbound to the Santa Rita Road Diagonal On-ramp to I-580 Eastbound via Hopyard Road, Owens Drive, Rosewood Drive, and Santa Rita Road (Completed by Pleasanton)
- § Stoneridge Cut-through: From the Stoneridge Drive Off-ramp from I-680 Northbound to the Santa Rita Road Diagonal On-ramp to I-580 Eastbound via Stoneridge Drive, Hacienda Drive, Rosewood Drive, and Santa Rita Road (Completed by Pleasanton)



- § Dublin Cut-through: From the Foothill Road Loop Off-ramp from I-580 Eastbound to the Airway Boulevard Off-ramp from I-580 Eastbound via Foothill Road, Dublin Boulevard, Tassajara Road, the Santa Rita Road Loop On-ramp to I-580 Eastbound and I-580 Eastbound (Completed by Caltrans)
- § Santa Rita Road: From the intersection with Stoneridge Drive to the Airway Boulevard Off-ramp from I-580 Eastbound via Santa Rita Road, the Santa Rita Road Diagonal On-ramp to I-580 Eastbound and I-580 Eastbound (Completed by Pleasanton)

The following table summarizes the changes in travel times following ramp metering implementation on several key segments within the travel time corridors studied. The average “Before” and “After” travel times are also illustrated for the freeway and arterial corridors in **Figures 3 and 4** respectively.

The findings of this evaluation show the results of the I-580 Ramp Metering project agree with the expected outcomes. Freeway travel times have been reduced upstream from the metered on-ramps with corresponding increases in freeway volumes. During metering periods, the added volume passing through the Santa Rita Road bottleneck appears to have caused increased congestion on I-580 Eastbound downstream from the metered on-ramps as traffic volumes decreased and travel times increased on the freeway.

Implementation of ramp metering also appears to have had the expected effect on arterial street traffic through the Cities of Dublin and Pleasanton. Traffic volumes have been reduced significantly during metering periods on the Santa Rita Road On-ramps. Travel times have also been reduced on the Hopyard, Stoneridge and Dublin cut-through corridors on the arterial streets not subject to increased queuing as a result of ramp metering implementation. On the arterial streets subject to increased queuing, Santa Rita Road and Tassajara Road, travel times have increased more than 125% as queues have extended on to each street from the Santa Rita Road On-ramp meters.

It is uncertain as to how much cut-through traffic diverting away from the Santa Rita Road On-ramps is remaining on the freeway or is using another route to cut-through on city streets. The I-580 Eastbound On-ramps at Hopyard Road and Hacienda Road experienced increases in traffic volume despite the implementation of ramp metering.

Traffic does not appear to be diverting through the City of Livermore as a result of the I-580 Ramp Metering Project. Traffic volumes decreased during metering periods on the SR-84 and Stanley Boulevard.



Executive Summary

Several factors, not measured as part of this study, may have had a significant effect on the travel times and volumes measured, including new commercial and residential developments, completion of roadway improvements and implementation of improved signal timings.

Average Travel Time Summary

Corridor	Limits	"Before" Average	"After" Average	% Change
I-580 EB Freeway	I-580 EB @ Foothill Rd. to I-580 EB @ Hopyard Rd. On-ramp	219 (3:39)	114 (1:54)	(-47.9%)
I-680 NB/I-580 EB Freeway #1	I-680 NB @ SR-84 to I-580 EB Merge	521 (8:41)	499 (8:19)	(-4.2%)
I-680 NB/I-580 EB Freeway #1	I-580 EB Merge to Airway Blvd. Off-ramp	712 (11:42)	629 (10:29)	(-11.7%)
I-680 NB/I-580 EB Freeway #1	Airway Blvd. Off-ramp to N. Flynn Rd. Off-ramp	632 (10:32)	682 (11:22)	7.9%
I-680 NB/I-580 EB Freeway #2	I-680 NB @ Stoneridge Dr. to I-580 EB @ Santa Rita Rd.	549 (9:09)	441 (7:21)	(-19.7%)
SR-84 cut-through	I-680 NB @ SR-84 to I-580 EB @ Vasco Rd.	1892 (31:32)	1702 (28:22)	(-10.0%)
Sunol-Stanley cut-through	I-680 NB @ Sunol Blvd. to I-580 EB @ 1st St.	1512 (25:12)	1557 (25:57)	3.0%
Hopyard cut-through	I-580 EB Off-ramp @ Hopyard Rd. to Rosewood Dr.	342 (5:42)	314 (5:14)	(-8.2%)
Stoneridge cut-through	I-680 NB Off-ramp @ Stoneridge Dr. to Rosewood Dr.	353 (5:53)	316 (5:16)	(-10.5%)
Hopyard/Stoneridge Cut-through	Rosewood Dr. from Hacienda Dr. to Santa Rita Rd.	180 (3:00)	161 (2:41)	(-10.6%)
Santa Rita Rd.	Santa Rita Rd. from Rosewood Dr. to I-580 EB On-ramp	83 (1:23)	188 (3:08)	126.5%
Dublin cut-through	I-580 EB Off-ramp @ Foothill Rd. to Tassajara Rd.	681 (11:21)	669 (11:09)	(-1.8%)
Dublin cut-through	Tassajara Rd. @ Dublin Blvd. to I-580 EB On-ramp	68 (1:08)	155 (2:35)	127.9%

Figure 1 – Project Area

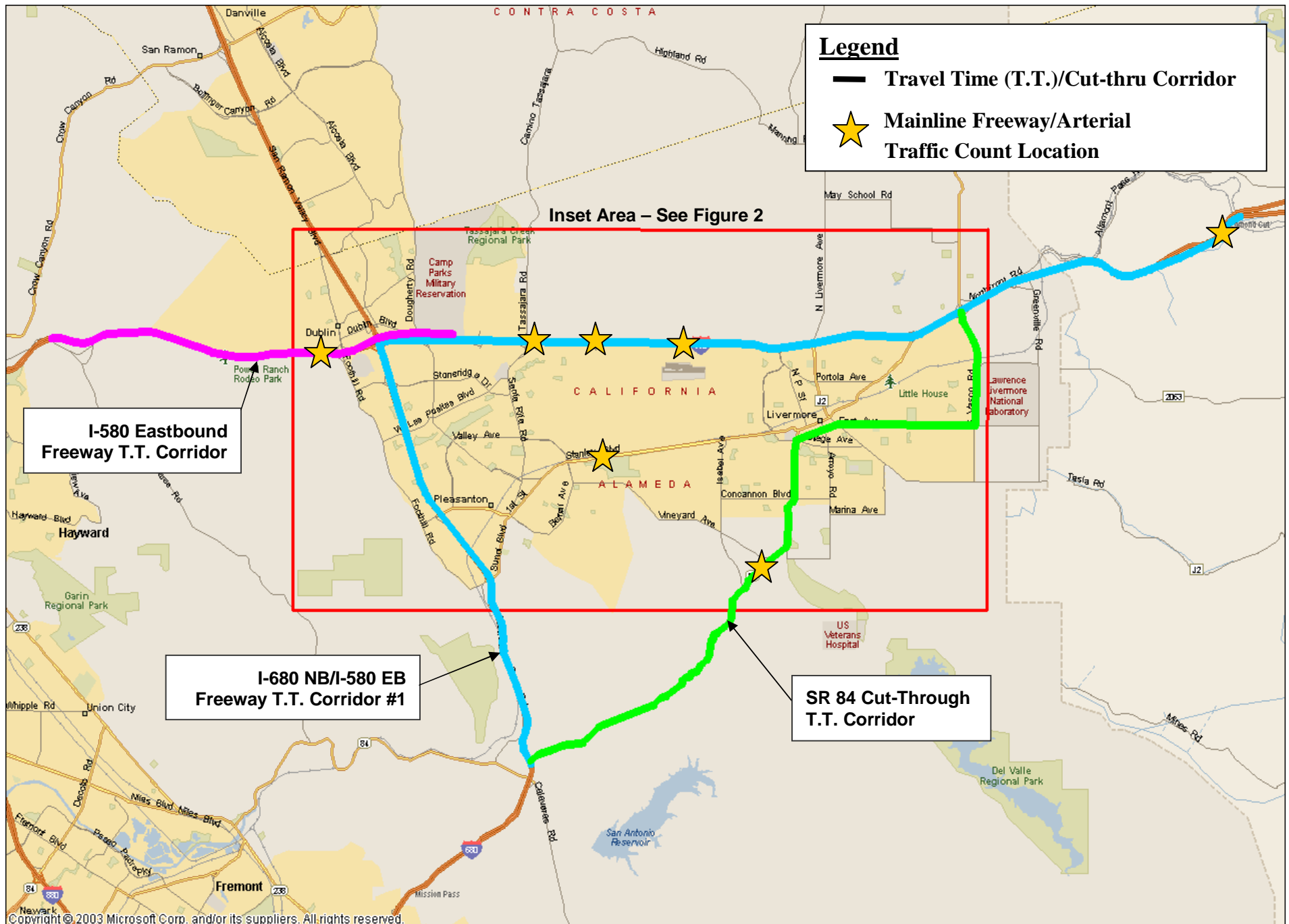


Figure 2 – Local Project Area

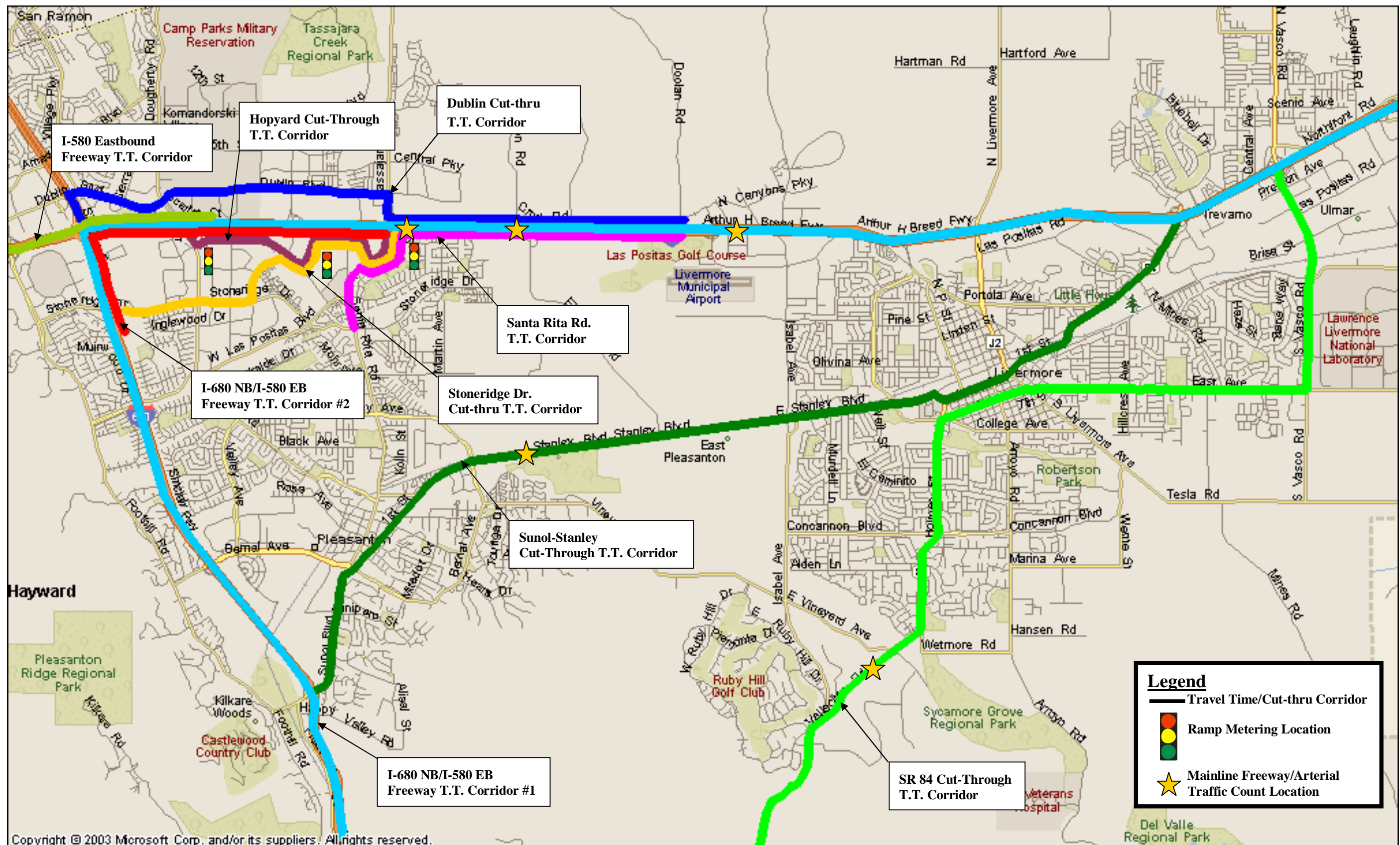


Figure 3 – Freeway Corridor Travel Times

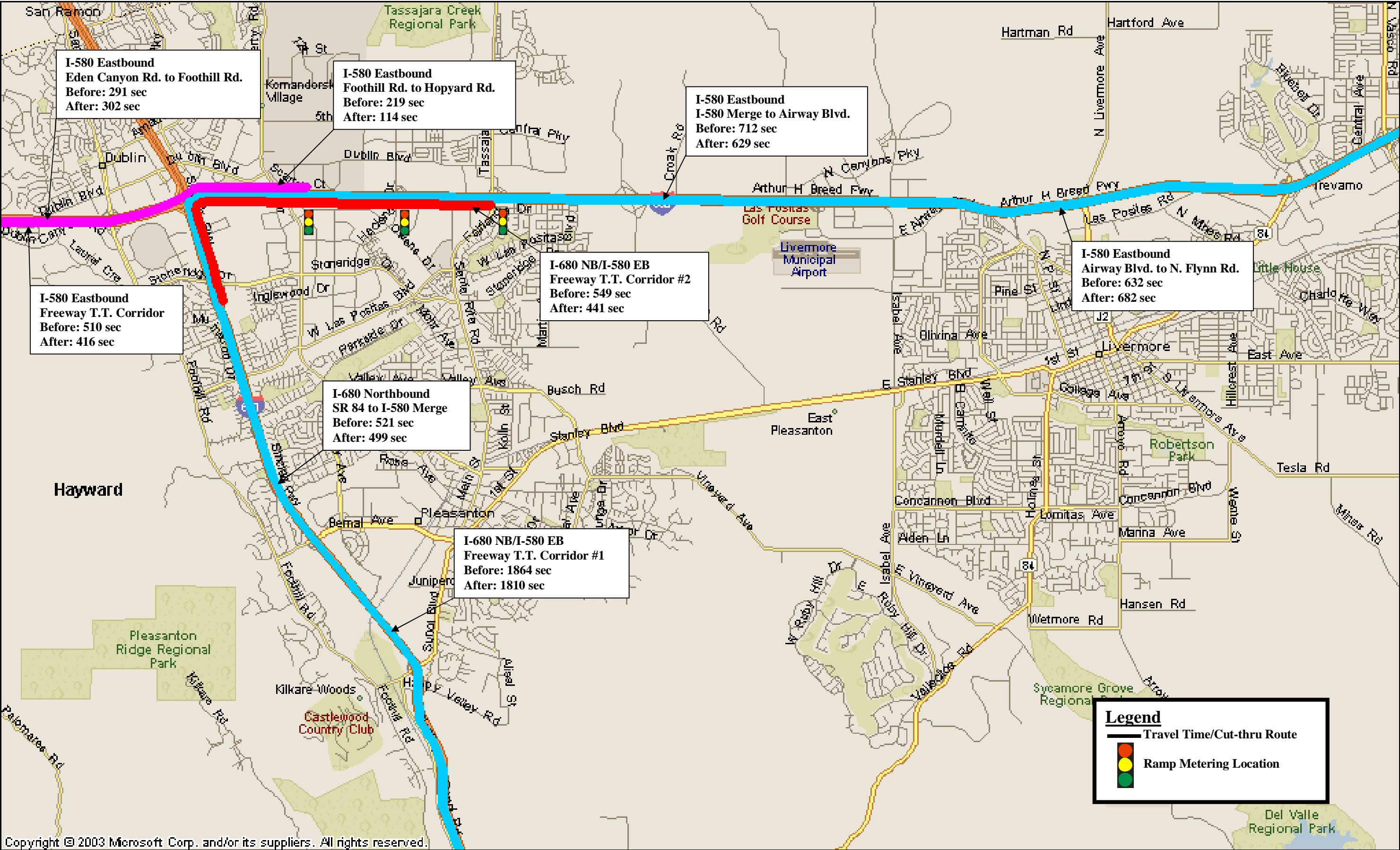


Figure 4 – Arterial Corridor Travel Times

